

## **Highlights of the Quarterly Meeting**

### **FEDERAL INTERAGENCY COMMITTEE ON INDOOR AIR QUALITY (CIAQ)**

Wednesday, April 24, 2002

**Introduction.** Given by Mary T. Smith, Division Director, IED; members/guests introduced themselves.

### **CIAQ Member Department and Agency Updates (HUD, CPSC, DOE, NIST, TVA, EPA)**

#### **Department of Housing and Urban Development (HUD) Lead Update - Ellen Taylor**

Our notice of funding availability (NOFA) is out for the Office of Lead Hazard Control and Healthy Homes. The Lead Hazard Control Grant, which is open to state and local governments, has about \$80 million available primarily for lead hazard control programs in privately owned housing. We have two Healthy Homes grant programs, Healthy Homes Demonstration Grants and Lead and Healthy Homes Technical Studies Grants. The Healthy Homes Demonstration Grant covers activities, including assessment, remediation, public education and training, that focus on community based programs to develop intervention strategies for environmental hazards in the home.

We currently have 28 grantees in 16 states and we are looking to fund 6-8 more programs with the \$5.5 million we have available this year. The other grant is the Lead and Healthy Homes Technical Study Grant, which evolved from the Lead Research Grants. We want to make it clear that you don't have to be a research institution to apply for these grants. The eligibility to apply for a Healthy Homes Grant is pretty wide open including universities, non-profits, state and local government, and even for profit institutions as long as they don't take any fee, only charging for time and materials. This year, \$2.5 million is available in this grant. The deadline for all the programs are June 14. This year we are not accepting any hand delivered applications. They must all be post marked on or before June 14. Applications are available and downloadable from our web site at [www.hud.gov/offices/lead](http://www.hud.gov/offices/lead). You can also get hard copies delivered to you by calling 1-800-843-8929.

One of our partners, the Alliance to End Childhood Lead Poisoning, has announced a new program named CEHRC (Community Environmental Health Resource Center). This program aligns with the Healthy Homes Program. This program will provide \$100,000 grants to non-profit community groups to develop approaches to intervene in hazardous housing, particularly in regards to lead, but also from other environmental hazards such as radon, CO, and other types of environmental hazards. The CEHRC also deals with infrastructure to support not only grantees but other communities in their efforts to find and fix hazardous housing. Part of the grant will be developed towards developing sampling protocols that can be used by community members and other non-professionals, buying equipment for the communities to rent, as well as technical support in terms of advising them on intervention and developing recommended control protocols. This grant will hopefully help develop some tools and introduce those tools into the community. Information on this program is available at [www.aeclp.org/cehrc](http://www.aeclp.org/cehrc). There are 9 days in terms of the application period. Eligible applicants are non-profit community based organizations

We did participate in the conference Affordable Comfort, which we do every year. This year they had a health and housing track. We worked with some affordable Comfort members who are working with Healthy Homes grantees to create this track which focused on mold, asthma, and building healthy homes. It was very well received and the programs were packed throughout the week. We are very pleased and we will continue to work with Affordable Comfort and other building performance organizations to advance the Healthy Homes message. Energy Star and DOE were also in attendance and sponsors. More information on the conference and

other activities are available at [www.affordablecomfort.org](http://www.affordablecomfort.org).

### **Consumer Product Safety Commission (CPSC) - Treye Thomas**

#### **Candle Wicks**

- The NPR will be published in the Federal Register on Wednesday, April 24.
- The proposal is to ban the use of metals containing greater than 0.06% lead by weight in candlewicks and to ban candles with wicks containing metals with greater than 0.06% lead by weight.
- The proposed rule also contains some record-keeping and labeling requirements.
- The public comment period is 75 days.
- Contact Kris Hatlelid at 301-504-0994 x-1389

#### **Smoke Alarms**

- Meeting on May 7 to review data from field analysis
- 2-story home in NC
- Pre-manufacture home on NIST campus
- Determine concentrations of irritant and asphyxiant gases
- CPSC and NIST will estimate effects of irritant gases on egress time

#### **CPSC CO related safety proposals**

- ANSI – Z21/83 Committee voted to establish a working group that will explore applying CPSC staff proposals for furnaces to a wider range of gas appliances
- Exploring using various gas sensing technologies to provide shut-off in response to elevated CO levels in the flue passageways
- Based in part on proof of concept testing that was completed on gas furnaces using two different gas sensing technologies (CO)
  - Monitor concentrations in flue (primary focus)
  - Shut-off mechanism
- Recommendations are based on performance requirements for the furnace in response to elevated CO levels
  - Prevent CO levels from exceeding acceptable concentrations
  - Shut off in response to elevated concentrations
  - 400 ppm in air free flue sample current standard
- Cannot recommend a technology but a performance requirement
  - Must have a means (technology) to implement proposed performance standard
- Any questions contact Ron Jordan 301-504-0508 x-1295 or Don Switzer x-1303
  - Report will be available on the CPSC Website [www.cpsc.gov](http://www.cpsc.gov)

### **Department of Energy (DOE) Update - John Talbott**

#### **The Association of States Energy Research and Technology Transfer Institute IAQ Research Agenda.**

The development of an agenda of high priority energy-related IAQ research by a multi disciplinary team led by LBNL's Indoor Environment Department is proceeding well. The draft agenda includes 10 broad goals, sets of top 22 and top 34 priority research areas, and text outlining the research needs and approach in all 34 areas. An industry / stakeholder advisory committee met to provide review comments on April 11 and a final report is expected by the end of July.

**Call Center Productivity Study.** Two conference papers and a report have been completed based on a study of productivity among call center workers. This study was performed by LBNL and the Center for the built Environment at U.C. Berkeley. The study provides some evidence of increased productivity at the highest

ventilation rates, but these findings are not conclusive. Temperatures above 24.5 °C are associated with a significant drop in work speed. A higher occupant density is also associated with slower work. Non-environmental factors significantly associated with work performance include time of day, day of week, and length of work shift.

**Indoor Health and Productivity Project.** As a task of the Indoor Health and Productivity Project co-funded by the Construction and Building Committee and Southern California Edison, the first of six sequential ASHRAE Journal papers on the relationship of IAQ with health and productivity has been published. The subsequent articles will address: 1) the magnitude of overall opportunity to improve health and productivity; 2) the relationship of ventilation rates to health and perceived air quality; 3) the relationship of ventilation rates to absence from work; 4) the relationship of day lighting in classrooms with student performance on standardized tests; and 5) the increased risks of lower respiratory symptoms when HVAC systems have evidence of contamination or pollutant sources near the outside air intake. The IHB web site and online bibliography has also been upgraded. The bibliography now contains about 900 citations with online abstracts for most of these citations.

**ASHRAE Standard 62.2.** ASHRAE Standard 62.2 “Ventilation and Acceptable IAQ in Low Rise Residential Buildings” has been revised to address comments from the second public review and a third public review is underway.

**National Academy of Science Institute of Medicine.** The National Academy of Science Institute of Medicine has started a review of the state of knowledge about the health effects of dampness problems and molds in buildings. Bill Fisk at LBNL is serving on the NAS Committee. For more information visit [www.iom.edu/IOM/IOMHome.nsf/Pages/HPDP+Damp+Indoor+Spaces](http://www.iom.edu/IOM/IOMHome.nsf/Pages/HPDP+Damp+Indoor+Spaces).

**INDOOR AIR 2002.** DOE and LBNL staff are working on the preparations for the Indoor Air 2002 Conference to be held June 30 – July 5 in Monterey, California are proceeding well. After the paper reviews and revisions are completed, approximately 800 papers are likely to be accepted for presentation. With 800 delegates registered to date, the organizers expect to have between 1000 and 1300 attendees. The organizing committee is still working on logistics and on organizing papers into sessions. The sponsors of this conference include DOE, EPA, CDC, American Industrial Hygiene Association, California Energy Commission, California Air Resources Board, and several companies. For more information go to [www.indoorair2002.org](http://www.indoorair2002.org).

The following papers were prepared for the Indoor Air 2002 Conference by LBNL staff and their collaborators:

#### **Indoor Air 2002 Papers**

- MG Apte, AT Hodgson, DG Shendell, D Dibartolomeo, T Hochi, S Kumar, SM Lee; SM Liff, LI Rainer, RC Schmidt, DP Sullivan, RC Diamond, WJ Fisk (2002) Energy and indoor environmental quality in relocatable classrooms. Accepted for presentation at Indoor Air 2002.
- MG Apte, LA Gundel, RL Dod, GM Chang, and RG Sextro (2002) A pilot study of the behavior of gas- and particle-phase ETS tracers in residences. Accepted for presentation at Indoor Air 2002.
- CA Erdmann, KC Steiner, and MG Apte (2002) Indoor carbon dioxide concentrations and SBS symptoms in office buildings revisited: analyses of the 100 building BASE Study dataset. Accepted for presentation at Indoor Air 2002.
- D Faulkner, WJ Fisk, DP Sullivan, SM Lee (2002) Ventilation efficiencies of a desk-edge-mounted task ventilation system. Accepted for presentation at Indoor Air 2002.

- CC Federspiel, G Liu, M Lahiff, D Faulkner, DL Dibartolomeo, WJ Fisk, PN Price, DP Sullivan (2002) Worker performance and ventilation: analyses of individual data for call-center workers. Accepted for presentation at Indoor Air 2002.
- CC Federspiel, H Li, DM Auslander, D Lorenzetti, AJ Gadgil (2002) Modeling transient contaminant transport in HVAC systems and buildings. Accepted for presentation at Indoor Air 2002.
- ML Fischer, MM Lunden, TL Thatcher, RG Sextro, and NJ Brown (2002) Predicting indoor PM<sub>2.5</sub> of outdoor origin: testing a transient size-resolved model using intensive measurements from a residence. Accepted for presentation at Indoor Air 2002.
- WJ Fisk, PN Price, D Faulkner, DP Sullivan, DL Dibartolomeo, CC Federspiel, G Liu, and M Lahiff (2002) Worker performance and ventilation: analyses of time-series data for a group of call-center workers. Accepted for presentation at Indoor Air 2002.
- WJ. Fisk, G Brager, M Brook, H Burge, J Cole, J Cummings, H Levin, V Loftness, T Logee, MJ Mendell, A Persily, S Taylor, J Zhang (2002) A priority agenda for energy-related indoor environmental quality research. Accepted for presentation at Indoor Air 2002.
- GA Heath and MJ Mendell (2002) Do indoor environments in schools influence student performance? A review of the literature. Accepted for presentation at Indoor Air 2002.
- SV Hering, MM Lunden, TW Kirchstetter, TL Thatcher, KL Revzan, RG Sextro, NJ Brown, J Watson and J Chow, (2002) Indoor, outdoor and regional profiles of PM<sub>2.5</sub> sulfate, nitrate and carbon. Accepted for presentation at Indoor Air 2002.
- AT Hodgson, D Faulkner, DP Sullivan, DL DiBartolomeo, ML Russell and WJ Fisk (2002) Effect of outside air ventilation rate on VOC concentrations and emissions in a call center. Accepted for presentation at Indoor Air 2002.
- AT Hodgson, MG Apte, DG Shendell, D Beal and JER McIlvaine (2002) Implementation Of VOC source reduction practices in a manufactured house and in school classrooms. Accepted for presentation at Indoor Air 2002.
- NE Klepeis and WW Nazaroff, (2002) Characterizing size-specific ETS particle emissions. Accepted for presentation At Indoor Air 2002.
- DL Liu and WW Nazaroff, (2002) Particle penetration through windows. Accepted for presentation At Indoor Air 2002.
- C Lobscheid, AJ Gadgil (2002) Mixing of a point-source indoor pollutant: numerical predictions and comparison with experiments. Accepted for presentation at Indoor Air 2002.
- DM Lorenzetti (2002), Assessing multizone airflow simulation software. Accepted for presentation at Indoor Air 2002.
- TE. McKone, TL. Thatcher, WJ. Fisk, and RG. Sextro (2002) Factors affecting the concentration of outdoor particles indoors: existing data and data needs. Accepted for presentation at Indoor Air 2002.
- MJ Mendell, GM Naco, TG Wilcox, and WK Sieber (2002) Building-related risk factors and work-related lower respiratory symptoms in 80 office buildings. Accepted for presentation at Indoor Air 2002.
- WW Nazaroff, BC Singer (2002) Inhalation of hazardous air pollutants from environmental tobacco smoke in US residences. Accepted for presentation at Indoor Air 2002.
- R Prill, and WJ Fisk (2002) Long-term performance of radon mitigation systems. Accepted for presentation at Indoor Air 2002.

- ML Russell, RG Goldstein, MG Apte and WJ Fisk (2002) Method for measuring the size distribution of airborne rhinovirus. Accepted for presentation at Indoor Air 2002
- O Seppanen and WJ Fisk (2002) Relationship of SBS-symptoms and ventilation system type in office buildings. Accepted for presentation at Indoor Air 2002.
- BC Singer, AT Hodgson, and WW Nazaroff (2002), Effect of sorption on exposures to organic gases from environmental tobacco smoke (ETS). Accepted for presentation at Indoor Air 2002.
- MR Sippola and WW Nazaroff (2002) Modeling particle deposition in ventilation ducts. Accepted for presentation at Indoor Air 2002.
- MD Sohn, P Reynolds, AJ Gadgil and RG Sextro (2002), Rapidly locating sources and predicting contaminant dispersion in buildings. Accepted for presentation at Indoor Air 2002.
- AM Webb, BC Singer, And WW Nazaroff, (2002) Effect of gaseous ammonia on nicotine sorption. Accepted for presentation at Indoor Air 2002.
- J Wagner, DP Sullivan, D Faulkner, LA Gundel, WJ Fisk, LE Alevantis, and JM Waldman (2002) Measurements and modeling of environmental tobacco smoke leakage from a simulated smoking room. Accepted for presentation at Indoor Air 2002.

#### **Access Board Update - Jim Raggio**

No progress to report at this time.

#### **National Institute of Standards and Technology (NIST)/ASHRAE Update - Andy Persily**

**BASE Ventilation Data:** NIST has started a project to analyze the ventilation data collected as part of the EPA BASE study of 100 office buildings. Will focus on outdoor air intake rates, supply airflow rates and how building factors affect these rates. Analysis results will presumably be used by others to understand impacts of ventilation rates on contaminant concentrations, occupant symptoms, etc.

**Study of Hybrid Ventilation:** With DOE and ARTI funding, we have started a simulation study to examine the performance of natural and hybrid ventilation systems in US office buildings. Hybrid systems employ natural ventilation strategies with assist fans when weather-driven ventilation is inadequate. We will be performing airflow simulations to look at issues of ventilation reliability, air distribution, outdoor air quality impacts, and energy.

**HUD projects:** NIST is continuing a number of projects funded by the Healthy Homes Initiative and the Office of Policy Development and Research. They include:

Definition of a set of residential buildings that represent the US residential housing stock.

Modeling of indoor contaminant sources, focusing on moisture, cooking and other activities.

Development of database of IAQ modeling inputs including source strengths, deposition rates, filter efficiencies.

Study of airflow & contaminant transport from attached garages in single-family residences. Long term study of moisture transport and the ability to predict indoor moisture levels in an occupied townhouse.

**IAQ Performance Metrics:** New project looking into development of metrics to quantify indoor environmental conditions, specifically what has been proposed, how they could be used, are we ready yet and what work needs to be done. Examples include concentration levels, parameters that combine concentrations of different

contaminants, and more nebulous ideas that address productivity and economics. A workshop on the subject will be held at the ASTM meeting in Norfolk on October 14, and we may have an additional discussion with some of federal friends – perhaps at a future CIAQ meeting (?) or elsewhere. Let us know if you are interested.

New NIST Test House: NIST is instrumenting a new double-wide manufactured test house for ventilation and IAQ research on the NIST campus. Will be using it to conduct studies of mechanical ventilation, air cleaning, VOC emissions from building materials, and residential moisture issues.

**ASHRAE STANDARD 62:** The committee revising Standard 62-2001 met earlier this month in Atlanta. Progress continues on various addenda to the standard. A summary of the addenda status as of March 2002 is available in the spring issue of ASHRAE IAQ Applications. The most significant action taken at the April meeting was the recommendation of addendum 62o for publication. This addendum changes the body of the standard to delete all smoking-permitted spaces from the table of required ventilation rates, lowering the rates in some spaces to reflect that change, and stating that the table applies to nonsmoking spaces only. The addendum also adds an informative appendix (not officially part of the standard) that provides some guidance on determining design ventilation rates in smoking-permitted spaces for odor control only. The appendix explicitly states that the appendix does not address the health effects of ETS. For more information, contact Andy Persily at 301 975-6418 or [andyp@nist.gov](mailto:andyp@nist.gov).

The proposed residential ventilation and IAQ standard 62.2P is currently undergoing its 3rd public review which ends May 20, 2002. The draft standard is available at [www.ashrae.org](http://www.ashrae.org). The 62.2P committee met April 19-20 to complete work on the responses to the 2nd public review comments. One significant change to the standard was voted - the sound rating required for intermittent kitchen and bath fans was raised from 1.5 sone to 3.5 sone (a smaller number is a quieter fan). The committee also began work on a companion residential ventilation and IAQ guideline. The committee will meet in June to begin consideration of the 3rd public review comments and to continue work on the guideline. For more information, contact Steven Emmerich at 301-975-6459 or [steven.emmerich@nist.gov](mailto:steven.emmerich@nist.gov).

#### **Tennessee Valley Authority (TVA) - Michael Broder**

The Electric Power Research Institute (EPRI) is proposing a research program titled, "Energy Efficiency and Improved Indoor Environmental Quality: Partners for Health Productivity, and Economic Gains". EPRI is a non-profit energy research consortium designed to benefit utility members, their customers, and society. Its mission is to provide science and technology-based solutions to global energy customers by managing a far-reaching program of scientific research, technology development, and product implementation.

Membership in EPRI is open to all organizations throughout the world who are involved in the energy industry. The three components of the proposed research program are 1) Integrated Economic Analysis of Energy Efficient and "Green" Buildings, 2) Sensor Technologies for Energy Efficiency and Improved IAQ and 3) Control Technologies for Improved Indoor Air Quality. The research program is currently being proposed and its emphasis may change before the program is finalized. Details regarding the amount of funding that will be available have not been finalized. Research projects are either sponsored by EPRI or are co-funded by EPRI and the member grantee.

#### **Environmental Protection Agency (EPA)/Indoor Environments Division (IED) Update - Mary Smith**

We have been very busy the past couple of months. One of the key things we recently released, which is currently on the website, is a document on residential mold. We have had our best selling document on schools and large buildings which has had a lot of hits on the website. And we keep reprinting it because they go so quickly. The new document focuses on homeowners because we receive a lot of requests and calls on mold.

This is a document to give some basic information. This document is not to be a residential companion piece to the school's guide. That will be a larger piece that we are going to release probably in more than 6 months.

We still haven't started on the document but Laura Kolb will start drafting this document. Laura is on our staff and is one of our residential mold experts and who did the large building and school's guide. She will start drafting a fairly robust residential guide, more geared to the practitioner and how to clean up mold in residences. The residential guidance that was just put up on the website is more geared towards the average consumer to give them basic information about mold and how to go about preventing it and cleaning up a small amount.

We are gearing up for World Asthma Day, May 7, 2002, if you are interested in participating, please visit our website at [www.epa.gov/iaq/asthma](http://www.epa.gov/iaq/asthma). We have a lot planned including working with the children's show Arthur, a cartoon series. They have a particular asthma module and they are going to play it on World Asthma Day and participate in many activities surrounding that day.

In regards to asthma and second hand smoke, the White House and the EPA have released a poster on second hand smoke and getting people to take the home pledge. Our office of Children's Health worked with the White House to get a poster featuring President George W. Bush. The poster provides our website and phone number. This is a partnership with the baseball community. The poster will appear in promotional materials including reprinted and included in programs.

We have our Third Annual IAQ Tools for Schools Symposium coming up, August 8-10, 2002 at the Grand Hyatt Hotel in Washington, D.C. If you are interested in attending or getting more information please visit our website at [www.epa.gov/iaq/schools/symposium](http://www.epa.gov/iaq/schools/symposium). You can register online at the website. Last year we had 350 people attend. This year we anticipate 400 attendees. As part of the Symposium we have our Annual Awards Ceremony honoring schools and school districts across the country who have done successful implementations of Tools for Schools.

We have many other things going on. We continue getting much attention from our Administrator. She was just in Philadelphia on Friday talking about asthma and Tools for Schools at one of our grantees, The Philadelphia Hospital.

**CIAQ Web Site - Philip Jalbert.** EPA is proposing to create and host a CIAQ web site. CIAQ members agencies are asked to provide comments on the proposal, and will be asked for further comments once a draft/prototype of the site is up on the web.

**Purpose.** To facilitate access to CIAQ activities, information and resources, by the general public and member agencies, etc.

**Hosting.** EPA in association with IED web site ( [www.epa.gov/iaq/](http://www.epa.gov/iaq/) )

**Content.** (1) origin and brief history, statutory authority, etc.

(2) member departments and agencies

\* links to members/ POC / web sites

(3) quarterly meeting schedule, minutes & presentations

(4) *Current Federal Indoor Air Quality Activities* report (PDF)

(5) links to key Indoor Environment, Indoor Air Quality, etc., web sites, including, e.g., FirstGov.

**Feedback.** Please provide your comments, ideas, suggestions to Phil Jalbert via email, [jalbert.philip@epa.gov](mailto:jalbert.philip@epa.gov).



**Next CIAQ Quarterly Meeting.** The next meeting will be held on Wednesday, July 24th, 2002 at 501 3<sup>rd</sup> St. from 1:00 to 3:30pm.

## **PRESENTATION**

The presentation was postponed because the document *Guidance for Protecting Building Environments from Airborne Chemical, Biological or Radiological Attacks* has not been released by HHS/NIOSH yet. The release date was set for Monday April 22 but there has been a delay. Mary Smith provided an overview of this Office of Homeland Security document since this presentation has been postponed.

Three to four months ago IED was contacted by the Office of Homeland Security. They were beginning to get a number of inquiries about building environments from several perspectives, including questions about ways to make our buildings more secure. Product manufacturers who had a product to sell which they thought would enhance the security of the building environment, had also begun aggressive marketing. These factors resulted in the creation of a work group under the Office of Homeland Security called the Building Air Protection Work Group. While participation is restricted to federal agencies only, the work group has made efforts to interact with outside stakeholders. We have held several meetings at this point. Agencies included are NIST, DOE, State Departments, Army Corps of Engineers, Navy, GSA, U.S. Postal Service, etc. The charge of the group is to work on preventive issues as opposed to response issues, i.e., how can we build or retrofit building environments to make them more secure from a Homeland Security perspective to resist or to mitigate a threat should it occur?

The Work Group's first product is a guidance document that recommends ways that building owners and managers can make their buildings more secure in the short-term. That is the document that was supposed to be released today and we were hoping to show a slide presentation. The document should be released by the end of this week. This is a 12 page document with recommendations for building owners including highly recommended actions and additional, less critical actions. The Work Group is also working on producing more specific guidance including filtration and air intake. There will be an invitee only workshop to review this first guidance document in the next couple of months. The group is also working on developing a research strategy..

**NOTE.** Subsequent to the April 24<sup>th</sup> CIAQ meeting, the U.S. Department of Health and Human Services (HHS), on Friday, May 10<sup>th</sup> 2002 , did release the *Guidance for Protecting Building Environments from Airborne Chemical, Biological or Radiological Attacks* document to the public. For more information, visit the HHS web site at [www.cdc.gov/niosh](http://www.cdc.gov/niosh), or call NIOSH at 1-800-356-4674 toll-free to obtain a copy. A PDF copy of the document was provided to CIAQ members via email on Wednesday, May 15<sup>th</sup> 2002.

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**CIAQ Attendees: Wednesday, 24 April 2002**

<b>First</b>	<b>Last</b>	<b>Agency/Org</b>	<b>Phone</b>	<b>Email</b>
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